

No. 702,609.

Patented June 17, 1902.

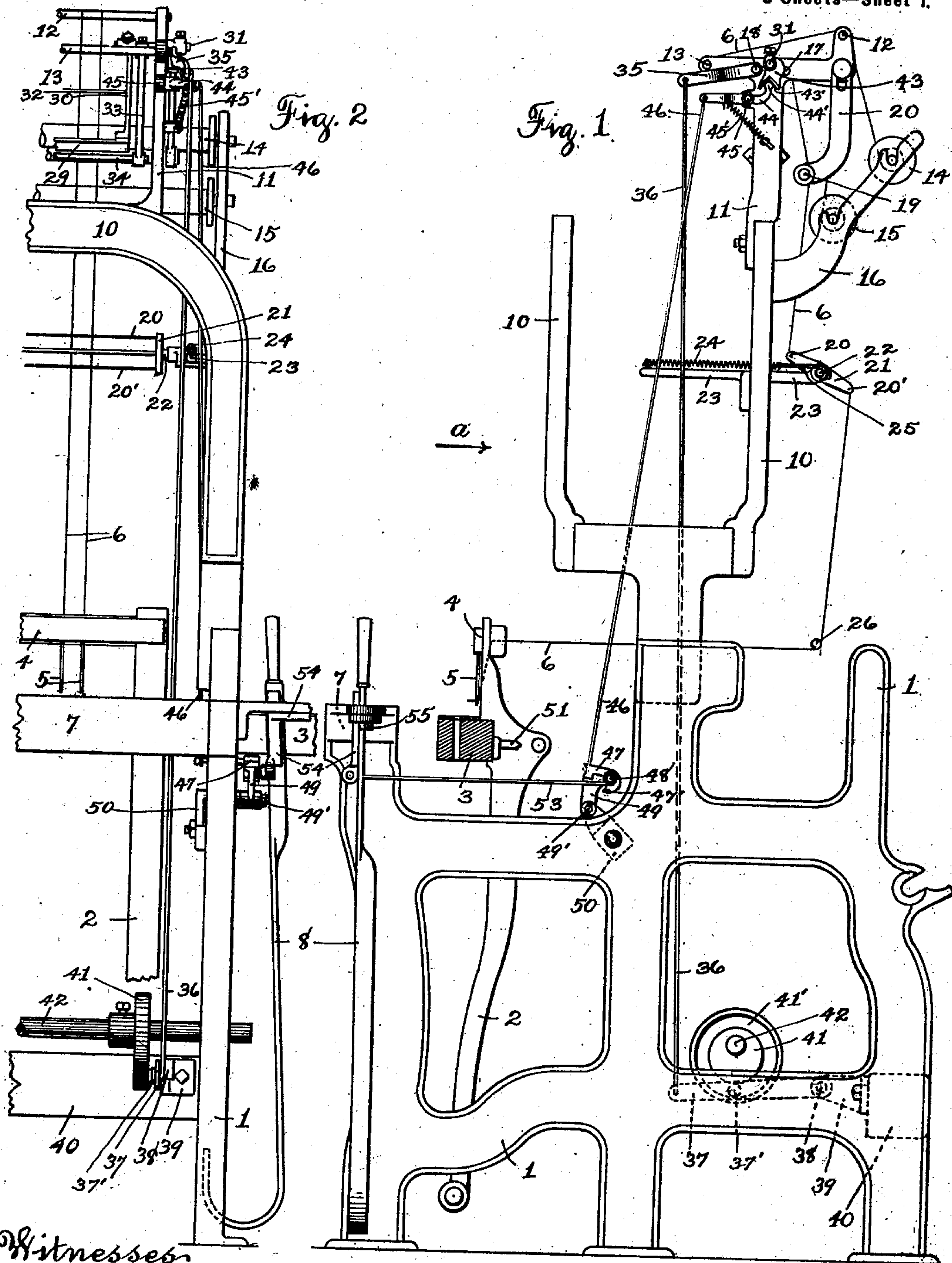
H. WYMAN.

MECHANICAL WARP STOP MOTION FOR LOOMS.

(Application filed Dec. 12, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
J. A. Kinsley
M. O'Leary.

By

Inventor
Horace Wyman

John L. Dewey. Att'y

No. 702,609.

Patented June 17, 1902.

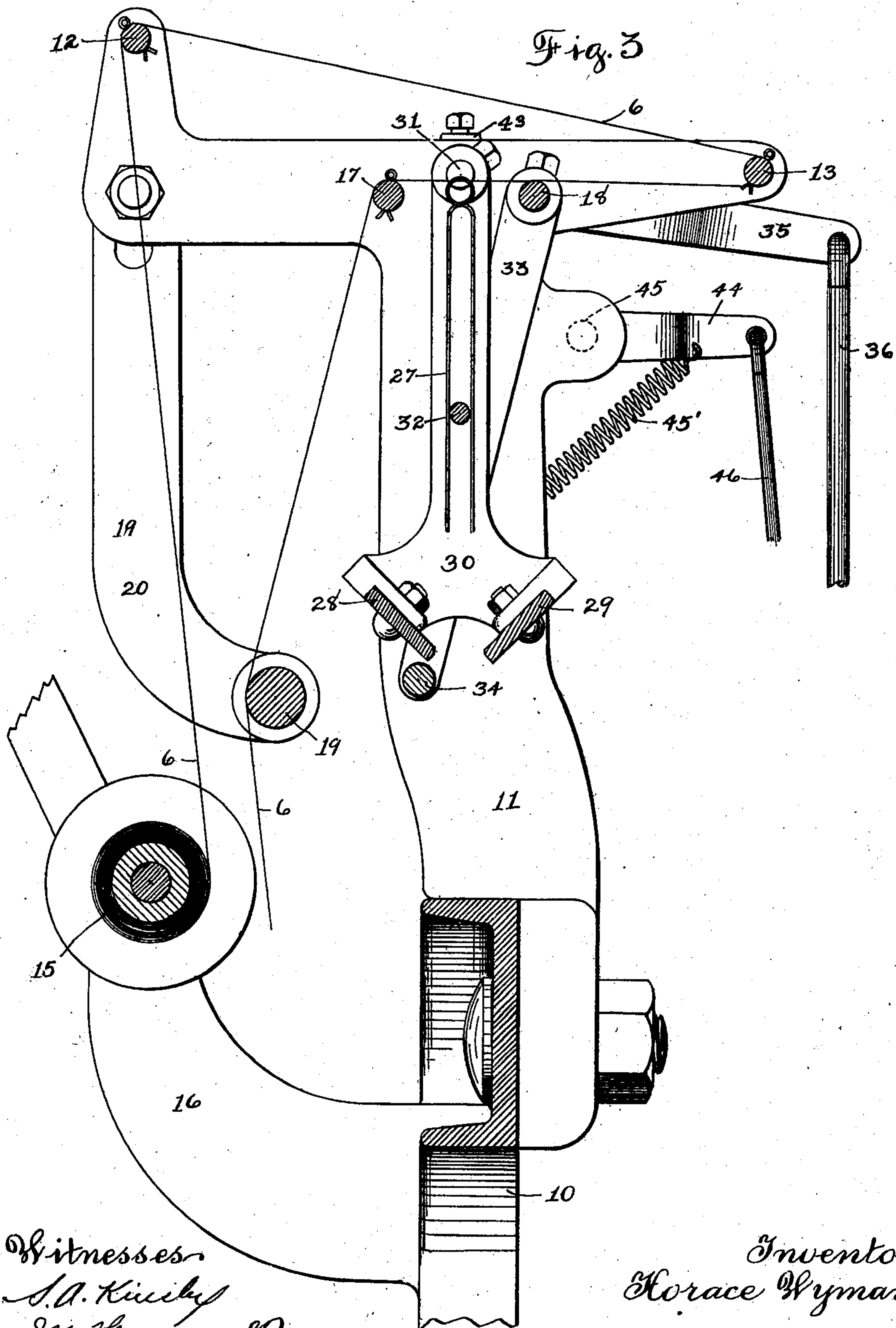
H. WYMAN.

MECHANICAL WARP STOP MOTION FOR LOOMS.

(Application filed Dec. 12, 1901.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses
J. A. Kinsley
M. Haas.

S. A. Kinsley
M. Haas.

M. Haas.

By

Inventor.
Horace Hyman

Horace Hyman

John C. Dewey Att'y

No. 702,609.

Patented June 17, 1902.

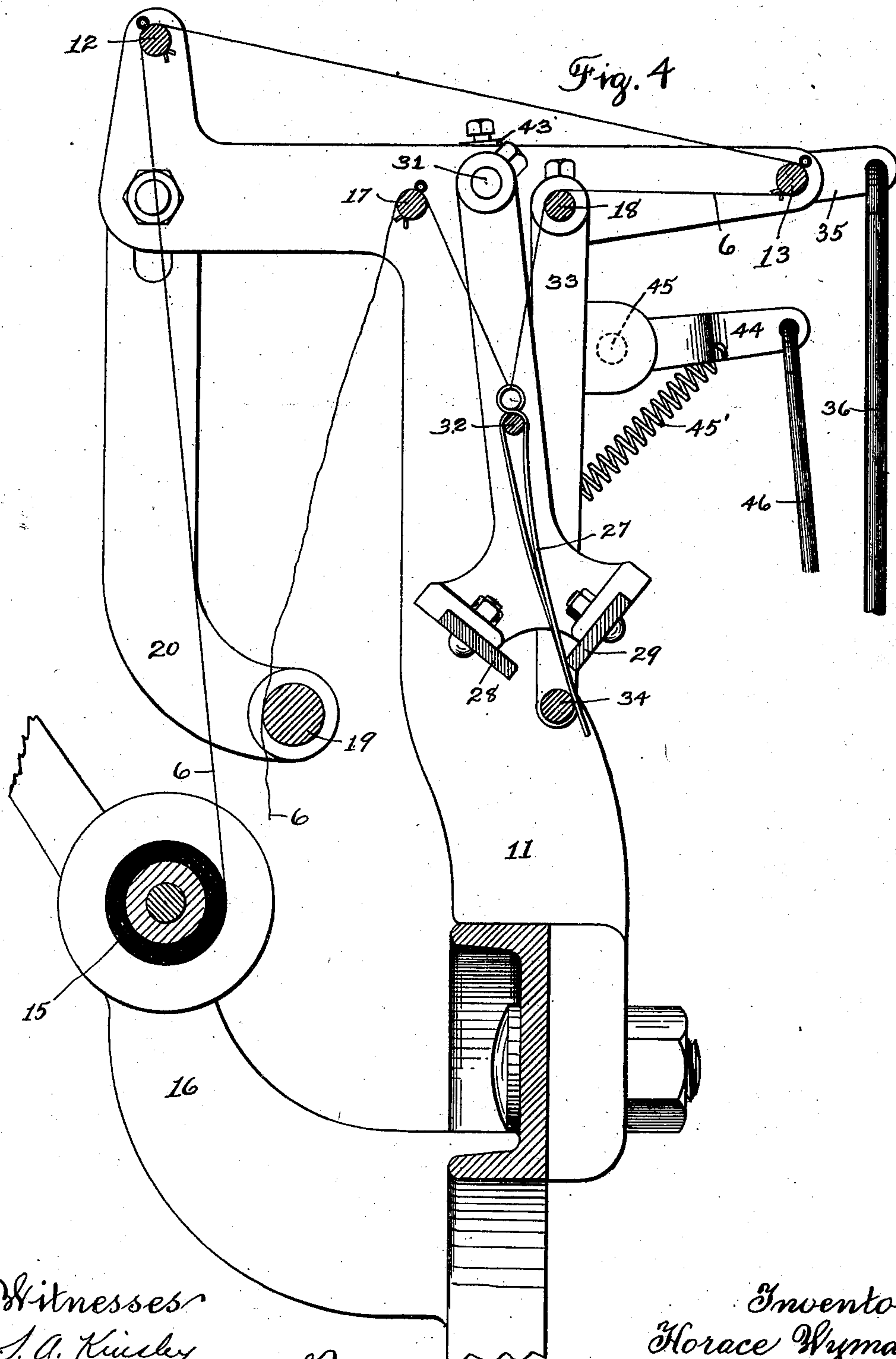
H. WYMAN.

MECHANICAL WARP STOP MOTION FOR LOOMS.

(Application filed Dec. 12, 1901.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses
J. A. Kinsley
W. H. Hase.

By

Inventor
Horace Wyman
John C. Dewey Atty

UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MECHANICAL WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 702,609, dated June 17, 1902.

Application filed December 12, 1901. Serial No. 85,649. (No model.)

To all whom it may concern:

Be it known that I, HORACE WYMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Warp Stop-Motions for Looms, of which the following is a specification.

My invention relates to warp stop-motion for looms, and particularly to a mechanical warp stop-motion for what are termed "lappet-loom;" and the object of my invention is to provide a warp stop-motion for lappet-loom to be used in connection with the lappet-threads, which extend above the ordinary warp-threads and lead over guide-rods to the lappet-needles, which motion on the breaking of any one of the lappet-threads will operate through coacting mechanism to stop the loom.

My invention consists in certain novel features of construction of my mechanical warp stop-motion for the lappet-threads of lappet-loom, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a right-hand side elevation of a portion of a loom with my improvements applied thereto. The lay is shown in section. Fig. 2 is a front view of the parts shown in Fig. 1 looking in the direction of arrow *a*, same figure. Fig. 3 shows on an enlarged scale a sectional inside view of some of the parts shown in the upper part of Fig. 2, with a drop-wire in its normal position; and Fig. 4 corresponds to Fig. 3, but shows the drop-wire in its lowered position.

In the accompanying drawings, 1 is the loom side; 2, the lay-sword; 3, the lay; 4, the needle-bar, carrying a series of needles 5, through the lower end of each of which is threaded a lappet-thread 6 in the ordinary way.

7 is the breast-beam.

8 is the shipper-lever, which is engaged and moved out of its retaining-notch to ship the belt and stop the loom in the ordinary way.

All of the above parts may be of the ordinary construction.

I will now describe the parts more particularly connected with my improvements.

To one of the arches 10 is bolted a T-shaped stand 11, to which is secured in this instance one end of the two guide-rods 12 and 13, over which the lappet-threads 6 pass from the lappet-thread beams 14 and 15, in this instance two in number and mounted in the stand 16, secured to the loom-arch. There are also two supporting-rods 17 and 18 between the guide-rods 12 and 13, which support the lappet-threads 6 in a horizontal plane, as shown in Fig. 3. It will be understood that there is a corresponding T-shaped stand 11 at the opposite end of the loom for supporting the opposite ends of the rods 12 and 13 and 17 and 18 and also a stand 16 for the two lappet-thread beams 14 and 15.

A guide-rod 19 is supported at one end in the lower end of a bracket 20, secured at its upper end to the upper part of the stand 11, and each lappet-thread 6 from the lappet-thread beams 14 and 15 passes over the rod 12 and around the rod 13 and over the supporting-rods 17 and 18 and over the guide-rod 19 to the tension device. (See Fig. 1.) The tension device in this instance consists of two parallel rods 20 20', Fig. 2, each supported in the ends of a centrally-pivoted lever 21, fast on a rock-shaft 22, mounted in the outer end of a stand 23, secured to the loom-arch.

The lappet-threads 6 pass under the upper rod 20 and over the lower rod 20' of the tension device, and a spring 24, secured at one end to the end of the stand 23 and at its other end to a strap 25, which extends around the shaft 22, acts to keep the tension device in a position to put a tension on the lappet-threads in the ordinary way. From the tension device the lappet-threads 6 pass around the guide-rod 26 and through the eyes in the lower end of the needles 5, as shown in Fig. 1, in the ordinary way. Upon each lappet-thread 6, between the supporting-rods 17 and 18, is supported a drop-wire 27, which in this instance is shown of loop form with an eye at its upper end to receive the lappet-thread. Extending below the drop-wires 27 are in this instance two inclined bars 28 and 29, having a space between them and secured at their ends to the lower end of a swinging arm

or bracket 30, which is fast at its upper end on a rock-shaft 31, having bearings in the stand 11. A transverse guide bar or rod 32 is secured at each end to the arm or bracket 5 30, and the drop-wires 27 straddle said guide-rod, as shown. The guide-rod 18 is loosely mounted to turn in its bearings, and it has fast thereon at each end the upper ends of two swinging arms 33, to the lower ends of 10 which are secured a transverse feeler-rod 34, extending just below the inclined bars 28 and 29 and adapted to be moved back and forth just below the opening between said bars by the rotation of the rod 17 and the swinging 15 of the arms 33. On the rod 18 is fast the inner end of a lever 35. The outer end of said lever is connected by a connector 36 to a lever 37, pivoted at 38 on a stand 39, secured to the cross-girth 40. (See Fig. 2.) The lever 37 20 carries a roll 37', adapted to extend into and travel in a groove 41' in the face of the cam 41, fast on the bottom shaft 42. (See Figs. 1 and 2.)

The revolution of the cam 41, through lever 25 37, connector 36, lever 35, and rod 17, communicates a continuous swinging motion to the arms 33 to carry the feeler-rod 34 back and forth below the inclined bars 28 and 29 as long as the loom runs and the drop-wires 30 27 remain in their normal position. (Shown in Fig. 3.)

I have shown in the drawings one form of mechanism, coacting with the warp stop-motion, above described, to stop the loom on 35 the breaking of a lappet-thread and the dropping of the drop-wire, and I will now describe said mechanism.

On the outer end of the rod 31 is fast a plate 43, having its lower end notched or recessed and provided with inclined surfaces 43'. (See Fig. 1.) Into the recessed lower end of the plate 43 extends the upturned end 44' of a lever 44, centrally pivoted at 45. A spring 45' acts to hold the end 44' in the recess in the plate 43. To the outer end of the lever 44 is attached the upper end of a connector 46. The lower end of the connector 46 is attached to a latch 47, pivoted at 48 on an arm 49, which is pivoted at its lower end 50 at 49' on a stand 50, bolted to the loom side. The latch 47 at its front end is notched to be engaged by the bunter 51 on the lay when said latch is in its raised position. A toe or projection 47' on the latch 47 engages with 55 the rear of the stand 49 and limits the raising of the latch 47, and the front end of the latch 47 engages with the top of the arm 49 and limits the lowering of the latch. To the pivot-pin 48 of the latch 47 is attached one end of 60 a rod or connector 53. The other end of said rod is attached to the lower end of a lever 54, pivoted at 55 (see Fig. 1) and having a recess in its upper end to receive the shipper-lever 8.

65 It will be noted that the lappet-threads do not pass through heddles, as do ordinary warp and pile warp threads, but are carried to nee-

dles usually mounted so as to project in front of the lay-reed, and which needles may be movable with the lay and sometimes movable 70 lengthwise thereof under the call of a pattern to vary the position of the lappet effect. On the other hand, it is necessary that the varieties of movements imparted to the lappet-threads may not be transmitted back to the 75 drop devices and that they be maintained in normal condition. Therefore the guide-bars and tension mechanism hereinbefore described act as a means between the lappet-needles and drop devices to prevent the trans- 80 mission of the said motion of the lappet-threads and the deflection of the threads at the point where the drop devices are located.

The operation of the mechanism shown in the drawings and above described for coact- 85 ing with the warp stop-motion will be readily understood.

In case of the breaking of a lappet-thread a drop-wire 27 will drop into the position shown in Fig. 4, the guide-rod 32 limiting the 90 downward motion of the drop-wire. In the swinging motion of the feeler-rod 34 said rod will engage the lower end of the drop-wire 27 and move it into engagement with one or the other of the transverse bars 28 or 29, accord- 95 ing to the direction of movement of the rod 34, and the continued movement of the rod 34, through the drop-wire 27, will move the swinging arms 30, fast on the shaft 31, and rock said shaft and move the plate 43 and 100 cause the inclined faces 43' to rock the lever 44 and raise its outer end, and through the connector 46 raise the latch 47 into a position to be engaged by the bunter 51 on the backward stroke of the lay. The engagement of 105 the bunter 51 with the latch 47 moves back said latch and the stand 49 and the connector 53, and through said connector 53 moves the lever 54 and disengages the shipper-lever 8 to stop the loom in the ordinary way. 110

In addition to the mechanism for stopping the loom in the case of the breaking of a lappet-thread above described any ordinary warp-stop-motion mechanism may also be used on the loom to stop the loom in case of 115 the breaking of a warp-thread.

It will be understood that the details of construction of my improvements may be varied, if desired, and any suitable form of mechanism for coacting with the warp stop- 120 motion to stop the loom may be used in lieu of that shown and described, and one of the transverse bars 28 and 29 may be omitted.

Having thus described my invention, what I claim as new, and desire to secure by Letters 125 Patent, is—

1. In a lappet-loom, the combination of a lappet-thread-supporting beam and lappet-needles, a series of drop devices supported by the lappet-threads between the lappet beam 130 and needles, means interposed between the drop devices and lappet-needles for maintaining a normal condition and preventing deflection of the lappet-threads as they pass through

the drop devices, and means operative on the dropping of a drop device to stop the loom.

2. In a lappet-loom, the combination of a lappet-thread-supporting beam and lappet-needles, a series of drop devices supported by the lappet-threads between the lappet beam and needles, guiding means and tension devices for the lappet-threads interposed between the drop devices and lappet-needles for maintaining a normal condition of the lappet-threads as they pass through the drop devices and means operative on the dropping of a drop device to stop the loom.

3. In a lappet-loom, the combination of a lappet-thread-supporting beam and lappet-needles, a series of drop devices supported by the lappet-threads between the lappet beam and needles, guide-rods and tension devices for the lappet-threads interposed between the drop devices and lappet-needles for maintaining a normal condition of the lappet-threads as they pass through the drop devices, said drop devices, guide-rods and tension devices being disposed above the plane of the warp-threads and mechanical devices operative on the dropping of a drop device to stop the loom.

4. In a lappet-loom, the combination of a lappet-thread beam and lappet-needles, drop devices normally supported by the lappet-threads between the beam and lappet-needles, means disposed between the lappet-needles

and drop devices for maintaining a normal condition of the lappet-threads as they pass through the drop devices, a guide-bar for the drop devices and a mechanical stop-motion comprising a transverse bar extending below the drop devices, a movable feeler rod or bar extending below said transverse bar and co-acting mechanism intermediate said bar and the shipper-lever to move the shipper-lever and stop the loom on the dropping of a drop device.

5. In a lappet-loom, the combination with the lappet-beam and lappet-needles, supporting-rods for the lappet-threads disposed between the lappet-beam and lappet-needles, a series of drop wires or bars hung upon the lappet-threads between said supporting-rods and extending in a plane above the ordinary warp-threads, a guide rod or bar for the drop wires or bars, and a mechanical stop-motion comprising two transverse inclined bars having a space between them and disposed between the lappet-beam and lappet-needles, a movable feeler rod or bar extending below the said inclined bars and coacting mechanism to move the shipper-lever and stop the loom on the breaking of a lappet-thread.

HORACE WYMAN.

Witnesses:

JOHN C. DEWEY,
M. HAAS.